

CLAIMS

What is claimed is:

1. A process for making a transistor comprising:
providing a substrate;
forming a dielectric layer on a portion of the substrate;
forming a gate structure on said dielectric layer having a gate oxide layer formed on said dielectric layer and a metal silicide layer formed on said gate oxide layer, said gate structure having a first sidewall and a second sidewall, said first sidewall and said second sidewall defining therebetween within said substrate a first contact region, a channel region and a second contact region; and
forming first, second, and third subregions within said second contact region, each subregion having a dopant concentration that differs from that of the other two subregions, said forming of said first, second, and third subregions comprising:
depositing a conformal layer of dielectric material over said substrate;
anisotropically etching said conformal layer of dielectric material, forming a layer of dielectric material on said first sidewall and said second sidewall;
subjecting said layer of dielectric material on said first sidewall and said second sidewall to an annealing/oxidation process;
forming a single layer sidewall spacer overlying said first sidewall and second sidewall;
introducing a first dopant into said substrate to form said first subregion;
forming another single layer sidewall spacer overlying said single layer sidewall spacer;
introducing a second dopant into said substrate to form said second subregion;
substantially removing said another single layer sidewall spacer; and
introducing a third dopant into said substrate to form said third subregion.
2. The method of claim 1, wherein said single layer sidewall spacer comprises a layer having a thickness in the range of between about 50 and 150 Angstroms.

3. The method of claim 1, wherein said another single layer sidewall spacer comprises a layer of material having a thickness in the range of about 2 to 20 times a thickness of said single layer sidewall spacer.

4. The method of claim 1, wherein said another single layer sidewall spacer comprises a layer of material having a thickness of about 550 Angstroms.

5. The method of claim 1, wherein said another single layer sidewall spacer comprises a material of one of silicon nitride and silicon dioxide.